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INSECTS IN RELATION
TO
NATIONAL DEFENSE

Circular 14

CHIGGERS



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INTRODUCTION

Chiggers, red bugs, jiggers, or harvest mites, Eutrombicula alfreddugesi (Oudemans), as they are variously called, are the larvae, or first active stage of a large scarlet soil-inhabiting mite. Although the chiggers found in the United States are not known to carry any disease, they produce extreme annoyance to man by their bites. The intense itching caused by these pests often interferes with sleep and the poison injected may cause fever and loss of appetite. Infection is often introduced as a result of scratching. This may produce troublesome local sores, and boils sometimes result. The annoyance caused by chiggers often has marked effect on the activities of individuals, and the efficiency of military units operating in heavily infested areas may be materially reduced. Men not accustomed to chigger attack usually suffer most, though some never seem to acquire any degree of tolerance. Chigger establishment and the effect of their presence vary greatly with individuals, some of whom are entirely immune to chigger attack.

DISTRIBUTION

In general chiggers are more troublesome throughout the Southern States. They are, however, rather abundant in eastern Kansas, in Missouri, the southern portions of Illinois, Indiana, Ohio, Virginia, and southern Maryland. They are present locally in some more northern States, such as Iowa, southern Minnesota, and Wisconsin, and also in Pennsylvania. Scattered occurrences are reported northward along the east coast to Cape Cod, Massachusetts. They are not found in the western part of the United States, although some are present along streams in central western Texas.

There is considerable local variation in chigger abundance. They prefer bottom lands and areas overgrown with weeds and brush, although they may be abundant on moist areas where weeds and brush are practically absent. They are notoriously bad in most areas overgrown with briars or blackberry bushes. They may occur, however, on well-kept lawns, especially the first year or two after an area has been cleared and developed. They are usually more abundant on heavy soils than on light sandy ones.

SEASONAL OCCURRENCE .

The seasonal activity and abundance of chiggers vary with the latitude and also with the weather conditions.

In portions of the country where hard freezes do not occur they may be present, though less abundant, throughout the winter. Somewhat farther north they become active about April 1, and toward the northern limits of their range, May 1 or later. Their first appearance in spring is usually at the time blackberries begin to bloom. At the latitude of Dallas, Texas they reach a peak of abundance about June 1, and their activity continues until heavy frosts occur (usually about November 15). Hot, dry weather in midsummer reduces their numbers, especially in exposed places.

HOSTS

Chiggers are of most importance as pests of man; but horses, mules, dogs, and cats are sometimes annoyed if heavily infested. They attack and seriously injure or kill young chickens, turkeys, and wild birds. They also attack rab-

bits and other wild animals and snakes, lizards, and toads.

LIFE HISTORY AND METHODS OF ATTACK

Appearance and Stages

Chiggers are the first, or six-legged, stage of a large scarlet-colored velvet mite. They are just large enough to be readily seen with the naked eye, Fig. 1. They crawl about

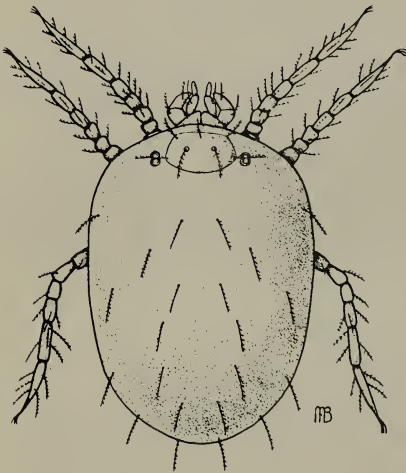


Figure 1 - A chigger, or red bug.

rapidly. When engorged the body becomes distended and about $1/32$ of an inch in length. The red color is usually less intense after engorgement than before.

When engorged with the blood of man or some animal the chiggers drop off and later, on the ground, molt their skins. The subsequent stages of the mites are not injurious in any way. They live as scavengers on decaying vegetation.

The mites become full-grown in the fall and burrow in the soil from $1/4$ to 1 inch and remain there during the winter. In the spring

they deposit a mass of eggs. These hatch several weeks later and the young apparently live several months if they do not find a host.

Chiggers Do Not Burrow Into the Skin

It is a common belief that chiggers burrow into the skin. This is not the case. They attach to the skin, usually close to a hair, Fig. 2, and inject an irritating secretion which

continues to cause severe itching for several days after they have dropped off or have been removed. Normally the chiggers become engorged in 4 to 6 days and drop off, but in the case of man they are usually scratched off within a day or two after the itching begins.

Place of Attack

Chiggers may attack any part of the body. As they usually crawl up from the soil and vegetation, however, they are likely to infest the lower extremities most heavily. They are inclined to stop crawling up and attack where there is some obstruction, as under hose supporters or belts. They may become



Figure 2 - Cross section of skin showing a chigger attached at base of hair.

well distributed over the entire body in cases where men find it necessary to lie or crawl on the ground. They may occur in the hair of the head, but as a rule are not troublesome there.

DIAGNOSIS AND LESIONS

Few people detect the presence of chiggers until they have been attacked for 2 to 12 hours. Itching usually starts in about that length of time and becomes more intense for the next day or two.

Accompanying the itching there usually develop raised whitish wheals from $1/4$ to $1/2$ inch in diameter, with a small reddish area around the chigger, which can be seen as a minute red point at the center. Later a small blister develops at the center. These blisters are usually broken and the chigger destroyed by scratching. Then a bright red area remains, and the itching may persist for a period of 4 to 10 days after the infestation occurred. If secondary infection is introduced the lesions may persist for weeks.

Those not familiar with chiggers often mistake an infestation for some disease. The distribution of the spots, the intense itching, and the small blister-like center of the lesion readily distinguish chigger infestations from other skin irritations. This is particularly true if an examination is made early while the chiggers are present.

CONTROL

Chiggers are so widespread and develop on so many forms of animal life that it is almost impossible to control them over large areas.

Prevention of Attack on Man

Clothing.--Closely woven garments with boots worn over the trousers will exclude many of the chiggers. Leggings if closely fitted over the shoes offer much protection, but some find their way under the leggings. Chiggers are able to pass through light clothing of open weave.

Sulfur dust as a protector.--Dusting the clothing and body, especially from the waist down, with sulfur gives almost complete protection against these pests. Ordinary flowers of sulfur will suffice, but the finer sulfurs (325 mesh) are better.

One should lightly dust sulfur on the skin, underclothes, and socks before going into chigger-infested areas. The effectiveness of the sulfur increases after it has been applied 2 or 3 days in succession, at which time it can be relied upon to give reasonably complete protection.

There are some who are sensitive to the repeated application of sulfur. If skin eruption results from sulfur, its use should be discontinued. Sulfur is somewhat objectionable because of the odor produced, especially when it is hot and the treated individuals are perspiring. It also discolors gold and other metal articles. Those who are susceptible to chiggers readily overlook these objections, however, because of the relief obtained.

Repellents other than sulfur have been suggested, such as kerosene applied to the shoes and outer clothing, but none of these is as satisfactory on the whole as sulfur.

Removal of Chiggers and Treatment of Bites

When a person is exposed to chiggers without having previously applied sulfur, a warm bath should be taken at once and all clothing changed. It is well to lather the body thoroughly with a soap containing sulfur or cresol and let the lather remain on 5 or 10 minutes before washing it off. Other soaps are reasonably effective if medicated soaps are not at hand. If there is certainty that chiggers have attached to the skin, a light application of kerosene or pyrethrum-oil fly spray to the body 2 or 3 minutes before bathing is advised. Caution. These materials may irritate the skin if left on too long.

There is little that can be done to allay the itching, other than to kill the chiggers as soon as possible and apply cooling lotions such as mentholated ointments or carbolated petrolatum. The application of collodion ("new skin") to each chigger bite is soothing.

Scratching should be avoided as far as possible. After the chiggers have been destroyed by the above methods a cold shower bath continued for some time may be employed. This tends to reduce the fever and local burning. Bathing in salt water, especially sea water, is also helpful.

Elimination of Chiggers from Grounds

Removal of underbrush and cutting of weeds and grass.---Chigger abundance can be reduced by

clearing out underbrush and keeping grass and weeds closely cut. The clearing operation should extend back some distance (50 to 100 feet) from the camp grounds.

Sulfur dusting of infested areas.--Some degree of control of chiggers can be secured by dusting the vegetation and ground thoroughly with 325-mesh sulfur. This treatment is most effective if supplemented with the clearing and grass cutting mentioned above. The sulfur should be applied at the rate of 50 pounds per acre with a dust gun (see Circular 20). The frequency of such applications to accomplish the greatest good has not been determined, but it is suggested that three or four applications be made at intervals of 2 weeks, beginning at the early part of the chigger season.

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